who has made life so pleasant these many years in housekeeping and business, over the shallow bank where only a few nicely terraced oaks were to be seen, and striking an attitude, front of stage, exclaimed "Look at that. That is perhaps the one best view, celestial, we will ever get."

In the morning Henry was halted at the windmill to be filled up. The owner of the pasture, we had learned to like; "he is white" we said, with his helper was doing his chores. He carried a double row of cartridges in his belt; a forty-five and a telescope lay upon a barrel-head, and a rifle rested against the derrick. The equipment was the best.

"Going a hunting?" I asked, innocent-like.

"Not this morning," he answered. "The fact is," he added, "it takes two of us to watch that fellow over in the other house. We have been shot at in this corral several times. Our fences have been cut and three horses and a cow shot this week. He wants me to buy him out and I don't want his ranch at the price he asks."

It is but a short distance from one thing to another all round the world. On the fifth of May we were again in Tuscon having collected at 134 stations.

NOTES ON THE SPECIES OF FASCIOLARIA OF THE SOUTHEASTERN UNITED STATES.

BY CHARLES W. JOHNSON.

The following notes of long standing are brought together for the purpose of pointing out some discrepancies that seem to have passed unnoticed. Another object is to supply a demand from some of our readers for something more pertaining to the marine mollusks.

Fasciolaria gigantea Kiener.

F. papillosa Sowerby, Tankerville Cat. App. p. 16, 1825; Reeve, Conch. Icon., (Fasciolaria) vol. 4, pl. 1, f. 1a, 1b, pl. 7, f. 1c, 1d, 1847.

F. gigantea Kiener Icon. Coq. Viv., (Fasciolaria) p. 5, pl. 10 and 11.

Tryon's Manual Conch., vol. III, p. 75, fig. 14–16, 1881.

F. crocata Philippi, Zeitschr. f. Malak. p. 25, 1848: Abbild. Besch. Conch. III, (Fasciolaria) Tab. I, f. 3, 1849.

F. reevei Jonas, in Philippi, Abbild. Besch. Conch. III, (Fasciolaria) Tab. III, f. 2, 1850.

Even this large shell is not free from a nomenclatorial tangle. *F. papillosa* Sowb., as pointed out by Tyron, seems to be the oldest name. I have not access to the Tankerville Catalogue, but if the young specimen as figured by Reeve (fig. 1a, b) and copied by Tryon (fig. 15) is the type, then this name seems somewhat doubtful. The spire and canal are both too long for a specimen of that size, in fact I cannot see any difference in figs. 1a and 1b, and the figure of *F. coronata* Lam. as figured by Reeve (pl. VI, f. 14 a, b.) Figure 1c and d of Reeve and copied by Tryon (fig. 16) is *F. gigantea*. The *F. crocata* Phil. from Yucatan is undoubtedly the young of this species and not related to *F. filamentosa* as suggested by Tryon.

In regard to its size, Tryon says: "Length 1 to 2 feet. This is the largest known species of univalve shell." Charles T. Simpson (Davenport Acad. Nat. Sci., v, 51, 1886), says: "On the Keys I have seen dead shells two feet in length, the largest Gastropod in the world." In THE NAUTILUS, XIX, 108, I had occasion to review Mr. Charles Hedley's paper, "On a large example of *Megalatractus aruanus* (L.), and incidentally mentioned that this Australian giant had a rival on our Florida coast, *F. gigantea*, quoting one of the above references. Mr. Hedley replied in a letter saying: "Give it in inches, I do not like the sound of the word feet." I remember a specimen 23 inches (about 575 mm.) in length, and there was a very large specimen in the collection of the late Joseph Wilcox which I cannot now locate. In writing to Dr. Dall, he says: "The largest specimen we have of *F. gigantea* measures 20 inches in length, with probably half an inch lost from the tip of the spire and as much more from the end of the canal; I have seen a bigger one but I do not remember the exact length of it. Call ours 530 mm. and it would, I think, be fair." The largest in the American Museum of Natural History is 20.25 inches and that in the Academy of Natural Sciences about the same.

Var. *reevei* Jonas.

This is not a form of *F. princeps* as suggested by Tryon. Although the type is comparatively small (135 mm. in length) the form is easily recognized and not uncommon on the Gulf coast of Florida. It was found by the writer at Marco. The prominent nodes become obsolete or wanting, especially on the body whorl; the shell is also thinner and does not reach the size of the typical form. While *F. gigantea* and *F. princeps* (from the west coast of Central America resemble each other superficially, there is a most remarkable difference in their opercula. The former has only the prominent concentric lines of growth on the exterior, while the latter has five deep longitudinal furrows on the middle and inner edge and irregular diagonal ribs on the outer edge.

The large bunches of egg-capsules of *F. gigantea* are conspicuous objects on the Florida beaches. These are poorly figured by Tryon (Manual, Vol. 2, pl. 7, figs. 78 and 79) as "Capsules of an unknown Muricoid mollusk." A bunch of capsules from Key West, Fla., nine inches in length and containing approximately 400 capsules was attached to a broad band which has no doubt contracted considerably in drying. Three of the capsules contained respectively 66, 70 and 76 embryonic shells. If these should average 70 per capsule, the entire bunch would produce upwards of 30,000 shells, but the death rate is enormous and very few ever reach maturity. Each capsule is wedge-shaped, the angles slightly winged and the sides with five or six irregular ridges. It is about 40 mm. in length, attached to the band by a pedicel about 12 mm. long.

The capsules of *F. tulipa* are in small clusters attached to shells and stones. It is also wedge-shaped and pedunculate, the sides are smooth, but the upper edge is ornamented by numerous undulations around its entire margin. In *F. distans* there is only a single indentation on the upper edge, forming a lobe that extends over the opening through which the young shells escape. The latter is figured by Tryon (Manual II, pl. 7, fig. 77) as *F. tulipa?*

Fasciolaria tulipa (Linné).

Colus achatinus Bolten, Mus. Bolt., 117, 1798. A variable

shell both in sculpture and color. A perfect shell of the smooth or more typical form shows interesting phases in sculpture in the early growth of the shell, the protoconch and about half a whorl of the young shell being smooth, followed by about half a whorl with only longitudinal ridges; this is followed by two whorls with prominent spiral ridges which gradually become obsolete or wanting except near the suture, these subsutural ridges increasing in prominence and often becoming crenulated or beaded on the last two whorls. On the anterior portion of the shell are also prominent spiral ridges. Some of the specimens from the Bahamas have a decided shoulder on the body whorl. Color whitish, mottled with brown or reddish blotches and with from 26–33 dark-brown spiral lines on the body whorl. Two specimens from the West Indies are uniformly light brown with the usual dark-brown spiral lines. Simpson says: "A mahogany-colored form is occasionally found on the Keys." It varies in length from 5 to 8 inches (125 to 200 mm.) and is found from North Carolina to the West Indies and Venezuela.

The varietal name of *obsoleta* was applied to a smooth form from St. Thomas, but this cannot really be separated. There is, however, a form in which the spiral grooves and ridges cover the entire shell. Tryon (Manual III, 74) says: "I figure a rugose form which Dunker intended at one time to describe as *F. scheepmakeri* but finally illustrated in his 'Novitates' as a variety of *F. tulipa.*" This name might therefore be used in a varietal sense for this form which is quite common on the Gulf coast of Florida.

Fasciolaria distans Lamarck.

As pointed out by Dr. Dall and others, this is a good species and not a variety of *F. tulipa* Linn., as stated by Tryon and later by Miss Rogers in the "Shell Book." It is smaller and smoother, having only faint spiral sulcations on two of the early whorls near the nucleus, and spiral ridges on the narrow anterior portion. There is also present an internal ridge on the body whorl in front of the suture. Color whitish, with bluish-gray or brown blotches and usually with five or six equidistant,

revolving, dark-brown lines. One specimen shows ten, but five of these are somewhat obsolete and close together near the narrow anterior portion of the shell. I have found living specimens at St. Augustine, Fla., in which the blotches were a light rose-pink, with the six revolving lines of a similar color. Dr. Dall records, from Belize, a pale salmon-colored specimen with the lines obsolete. The species varies in length from 65–85 mm. It ranges from North Carolina to Florida and westward to Mexico.

THREE NEW ALPINE VERTIGOS FROM CALIFORNIA.

BY S. STILLMAN BERRY.

Among numerous *Pupillidae* collected from the higher mountain regions of California during the past few years appear several apparently undescribed forms, diagnoses of three of which are given below.

VERTIGO MODESTA MICROPHASMA, new subspecies. Figs. 1–6.

The shell is cylindro-conic, rimate-umbilicate, thin, very pale horn color, by transmitted light transparent and colorless. The surface is glossy and distinctly irregularly, obliquely striate, especially on the upper whorls. The spire tapers from the last whorl, at first gradually, then more rapidly, to the obtuse apex. The whorls are strongly convex, the last with an indentation just back of the aperture over the lower palatal tooth, subsequently with a narrow, abrupt, axial constriction, then swollen to form a low, wave-like crest just back of and parallel to the lip. The aperture is rounded triangular, scarcely constricted on the outer margin, the peristome thickened and porcelain white in color, showing through the back of the shell as a white line, but the sharp lip scarcely reflected except over the columella. The posterior angle of the outer lip curves in rather sharply to the body whorl. The number of teeth varies from 2 to 5. The palatal and columellar lamellae are always well developed. In addition there is almost always a well developed lower palatal. A smaller, but variable upper palatal